

6.0 Sample Specification — GILSULATE® 500_{XR}

SECTION 15255 — UNDERGROUND PIPE INSULATION/PROTECTION SYSTEM

PART 1 — GENERAL

RELATED DOCUMENTS

Drawings and general provisions of contract, including General and Supplementary Conditions and Division - 1 Specification sections, insulation manufacturers shop/installation drawings and Design and Installation Manual apply to work of this section.

DESCRIPTION OF WORK

Extent of underground piping insulation required by this section is indicated on drawings and schedules, and by requirements of this section.

Types of underground piping insulation specified in this section include the following:

Inorganic, engineered granular, underground pipe insulation

QUALITY ASSURANCE

Manufacturer's Qualifications: Firm regularly engaged in the manufacture of granular insulation products, of size and type required, whose product has been in satisfactory use in similar service for not less than 10 years.

Installers Qualifications: Firm with at least 3 years of successful installation experience on projects with elevated temperature mechanical insulation systems.

SUBMITTALS

Product Data: Submit manufacturer's technical data and installation instructions for insulation system specified. Submit manufacturer's data showing conformance with requirements of this section.

DELIVERY, STORAGE, AND HANDLING

Deliver insulation, associated adhesives, form work and supplementary steel to site in manufacturer's containers with manufacturer's stamp or label clearly shown.

Protect insulation and associated components against dirt, water, and chemical damage.

PART 2 — PRODUCTS

ACCEPTABLE MANUFACTURER:

Manufacturer: Subject to compliance with requirements, provide products of:

Gilsulate International, Inc. (GILSULATE® 500_{XR})

SUBSTITUTIONS:

Request for substitutions must be made within 10 days prior to bid, approved substitutions will be included in an addendum prior to bid. Requests must indicate all deviations from requirements of this specification.

PIPING INSULATION MATERIALS:

Inorganic Granular Insulation: provide engineered inorganic non-toxic, non-flammable, Sodium Potassium Aluminum Silicate insulation with Calcium Carbonate filler. The insulation shall be chemically treated to render it hydrophobic. The insulation shall be free of Asbestos.

Approved product: GILSULATE® 500_{XR}

Provide insulation with the following properties:

Density: 40 - 42 lb/cu. ft. consolidated use density

Load Bearing: 12000 psf at consolidated density

Prior to backfill the insulation must support a man's weight

Thermal Conductivity: $K = 0.60 \text{ BTU/hr/sq.ft./deg.F/in}$ at consolidated density and at mean temperature of 175°F

$K = 0.65 \text{ BTU/hr/sq.ft./deg.F/in}$ at 300°F

Temperature Range: 35°F to 800°F

Electrical Resistivity: greater than 10 to the 12th Ohm-cm

Protective Coatings: provide a bitumastic self-priming, heavy duty, cold-applied, water proof coating made from pitch derived from tar and solvents. Approved product, Carboline® "Bitumastic Super Service Black" or equal. Up to 400°F.

Structural Steel Components: provide steel anchors and guides as required by the contract documents and insulation manufacturer's drawings and Design and Installation Manual.

Expansion Cushions: provide 3 to 5 pound density mineral fiber cushion to accommodate thermal expansion at expansion loops and elbows as required by the contract documents and insulation manufacturer's drawings and Design and Installation Manual.

PART 3 — EXECUTION

INSPECTION:

Examine area and conditions under which mechanical insulation is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected. All standing water shall be removed from trench prior to installing insulation.

Pile dirt from trenching on one side of trench and work from

6.0 Sample Specification — GILSULATE® 500XR

opposite side. Insure bottom of trench is free of debris and large stones. Bottom of trench shall be undisturbed soil.

INSTALLATION:

Installation of anchors: Install structural steel and concrete of the size and quantity shown on the contract documents. Pour 2000 psi concrete at 28 days around rebar and anchor post and against undisturbed soil. Insure anchor post and support channel (if required) are at the proper elevation for installation of piping. Insure the rebar and the bottom of the anchor post is within the concrete envelope. Just prior to pouring the insulation coat all exposed steel (anchor post, support channel and knee brace) with bitumastic.

Installation of guides: Install structural steel and concrete of the size and quantity shown on the contract documents. Pour 2000 psi concrete at 28 days around lower portion of guide brackets and against undisturbed soil. Weld the horizontal guide brackets at the proper pipe elevation. Just prior to pouring the insulation coat all exposed steel guide brackets and spacer angles with bitumastic.

Installation of expansion loop support: Pour concrete support pad of the size indicated on the contract documents. Insure pad elevation is correct for proper pipe elevation when the concrete pipe support is installed. Coat pipe support with bitumastic.

Installation of temporary pipe supports: Provide temporary pipe support wires suspended from lumber bridging the trench. Temporary wood blocks located under the pipe may also be used. These supports must be removed as the insu-

lation is poured and consolidated. No object should be allowed to bridge the gap between the soil and the pipe except the insulation.

Installation of expansion cushions: Wrap mineral fiber cushions around pipe elbows on expansion elbows and expansion loops as indicated on the contract documents. Insure there is sufficient space or flexibility between cushions to allow insulation to pour and be consolidated under piping. Secure cushion to pipe with strapping.

Installation of forms: Provide gypsum board forms with support posts as shown in American Thermal Products Design and Installation Manual. Posts must be located on the outside of the forms and spaced to prevent bowing of the gypsum board. After forms are in place, partially backfill outside of form to height of pipe.

Testing of pipe: Prior to installing insulation, inspect welds and pressure test pipe as required by other sections of this specification. Clean pipe of all dirt, scale and foreign materials.

Pouring of insulation: Pour insulation in short sections along the pipe axis. Apply bitumastic to structural steel surfaces and fill trench to center line of pipe. Consolidate insulation using a rod-type concrete vibrator pulled along the sides and between the pipes. Pour and consolidate additional layers of insulation until the design coverage has been achieved. Proper consolidation is achieved when the insulation can be walked on with foot prints less than 1" deep.

Backfill first 6" of soil (no stones) by hand. Complete backfilling and mechanically compact in layers to grade level.